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personal, while the house is common and impersonal. Later we may have the purpose of going around to see which of us is right, but that is not the idea, nor does the idea guide us. Our 'plan of action' will be to walk around. Before we seek to verify our ideas, what do we believe? If I am not mistaken, that the house there is of a certain form and the invisible portion 'hangs on' the part seen by us. The question before each is, Have I filled it out properly?

Perchance, a side-light can be thrown on this problem by a contrast. Some ideas are plans of action, literally, and yet not concerned with truth. I have a problem at present. It is this, Shall I go to the library or down town? It is surely a reflective situation, and I can think of myself as doing either, but I do not raise the truth question. Why? After I go down town I do not say, I was right. Why, again? Because I am dealing here *with another sort of reality*. Ordinarily people do not regard themselves as determined, as the house is. The very nature of this sort of reality is to be changing, active. It strikes me that genetic analysis of the various constructs we make, would go a long way towards solving logical problems.

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SOCIETIES

SECTION OF ANTHROPOLOGY AND PSYCHOLOGY OF THE NEW YORK ACADEMY OF SCIENCES

REPORT OF THE SECRETARY

SINCE last reported in these pages, two meetings have been held, in conjunction with the New York Branch of the American Psychological Association.

At the meeting of February 25, held at Columbia University and the American Museum of Natural History, Mr. S. Froeberg gave the results of an experimental study of 'Reaction Time as Affected by the Intensity, Area and Duration of the Stimulus.' He used chiefly light stimuli, and found the reaction time to decrease as the intensity, area or duration increased; as the magnitude of the stimulus increases in a geometrical series the time of reaction decreases in arithmetical progression. A given ratio of increase of intensity produces about twice as much decrease in reaction time as does the same ratio of increase of area or duration. In case of sound, also, increase of intensity brings decrease of reaction time.

Dr. Harvey Carr reported 'A Case of Incipient Hysterical Trance.' The subject was a young woman who since the age of six years, following an attack of typhoid fever, had been subject to recurring attacks of partial trance, in which, though no unconsciousness, amnesia or alternation of personality occurred, there was motor paralysis (without rigidity) and the following peculiar visual experience. Objects appeared to move away, while remaining, at first, clear-cut and real; next they either remained in the distance or disappeared in a haze, or sometimes the whole visual field became blank. Her feet, as she lay, seemed far away, and this visual illusion was accompanied by the tactile illusion of being indefinitely long. Auditorily, the experience was one of great quiet. The experience was terrifying, but she was unable to struggle or cry out. The subject presented some further symptoms of hysteria, and a comparison of her case with that of Helène Smith leads to the view that only circumstances making the subject antagonistic to her trances and to occultism prevented her from developing into a trance medium.

Mr. W. C. Ruediger spoke on 'Individual Variations in the Area of Distinct Vision.' He has explored an area near the center of clear vision by the tachistoscopic method, and determined the limits within which the letters 'u' and 'n,' of a certain type, can be distinguished 90 per cent. and also 75 per cent. of the time. There were found to be individual differences in the area of distinct vision, comparable in magnitude to the differences found in most other traits. Slight if any correlation could be detected between the size of the area of distinct vision and the speed of reading or the number of fixation pauses per line of print. The amount read during one fixation pause is, in most persons, much less than the amount covered by the area of distinct vision.

Brother Chrysostom, in discussing 'Space,' noted two sources of confusion in treating it. The first consists in a failure to distinguish between real and ideal space. Real space may be defined as the real extension of a given body considered as contained within the surfaces that bound it. This concept is complex, containing an objective element—a real extension, and a subjective element—a logical relation. Real space, viewed concretely, is neither infinitely divisible nor infinite, as current physical and astronomical discussions illustrate. Confusion also arises from an implied identification of space and place. As real space is primarily real *extension* and therefore *solid contents* as bounded, so place is primarily the *bounding surface* referred to the enclosed or bounded body. The two concepts are complementary, not identical.

Professor Dickinson S. Miller traced the doctrine of 'Imageless Thought' back to Descartes, Spinoza and Schopenhauer. The argument for it has been that since the work of thought, the conclusion reached, can not be attributed to sensation or to images of sensation —since, indeed, the work of thought may be accomplished in the absence of imagery—therefore there must be some other agent in thought, and consciousness must contain *something* besides sensation and imagery. To this argument the answer is that there need be nothing there. Nothing capable of doing the work of thought need show in consciousness. Thought as a function must be distinguished from conscious content. As a function, thought is essentially unconscious. It makes no difference how impotent and irrelevant the images in consciousness may appear, if only by good luck their associations are such as to lead to the right conclusion. What those who testify to experience of imageless thought really experience is probably a bodily feeling, which, left unanalyzed, appears as a feeling of satisfaction or of being on the right track, but which, when carefully attended to, is found to be of sensory quality, like all other conscious content.

Dr. C. B. Bliss sought to show 'Possible Relations between the Trinities of Psychology and Theology.' Theologians have usually sought to derive the concept of the Trinity from quite other than psychological sources. Yet the existence of a psychological trinity is certainly a suggestive fact in this connection; it seems possible that the concept of God as threefold has arisen from conceiving the fundamental tendencies of the human mind as indefinitely expanded. Expansion of the intellectual tendency would give God as the world ground; expanding the emotional tendency would give God as universal love; and expanding the active tendency would give God as universal action.

Professor Keyser, under the title 'Some Relations of Geometry to Philosophy and Psychology,' discussed certain questions connected with the bases of geometry. In Hilbert's 'Foundations of Geometry' culminate the efforts of western thinkers from pre-Euclidean times so to analyze the space intuition as to provide a simple and complete set of independent axioms for the science of space, in particular for what is now distinguished as Euclidean geometry. For Hilbert as for Euclid, the elements of space fall into three classes or systems, points, planes, lines. Hilbert's axioms are statements of certain relations that shall be the fundamental relations satisfied by the elements, but—and this is very important—the elements are not further defined. Accordingly, if one asks, What are points, planes and lines? the answer is, They are any three systems of entities that satisfy the axioms and require no others. Are there other entity systems than those of points, planes and lines, that satisfy the Hilbert axioms? There are infinitely many such other triplets of systems of entities.

One of the most obvious of such triplets consists of the system of points of space except a single specified point, say *P*, the system of all the spheres containing *P* regarded as bereft of *P* and so called pseudo-spheres, and the system of all the circles containing *P* regarded as bereft of *P* and so called pseudo or pathological circles. These three systems perfectly satisfy the Hilbert axioms, and the description of the 'space' composed of these systems of entities regarded as elements is *logically* identical with Euclidean geometry, though *psychologically* the geometries are as different as fire and water or as red and bitter. Euclidean geometry is, therefore, one; psychologically many—infinitely many.

On April 22 a meeting was held in the psychological laboratory of Yale University, by invitation of the Yale Psychological Club.

Professor R. S. Woodworth explained 'A Method for Measuring Differences of Order, and its Use in Studying Correlation.' The method differs from the Spearman method of counting up differences of rank in that only the *relative* positions of the terms are considered. The unit of change in order is the transposition of two terms, and the difference between two orders of the same terms is measured by the number of transpositions necessary to pass from one order to the other. This number is easily counted up, and the necessary constants, *e. g.*, the total number of transpositions necessary to *reverse* a given order, are also readily calculated. The method has the same advantages in psychological work as are brought out by Spearman in favor of his method of measuring changes in rank; the present method is claimed by its author to be more accurate and adequate for the purpose in hand.

Mr. F. N. Freeman gave a preliminary report of his 'Studies in Writing Reactions.' The reactor traced lines with an ordinary pencil on a fixed sheet of paper, as in writing, and the tracing was taken on the moving kymograph strip beneath through a typewriter ribbon. The pressure changes which accompanied the movement could also be recorded. The three general types of reaction which occur in writing, consisting, respectively, in starting a movement, stopping a movement, and changing the direction of a movement, were compared as to their reaction time and as to the relative speed, amplitude and pressure of the movements themselves. The reaction time in stopping a movement was, on the average, over 40 per cent. slower than in starting a movement. This may be accounted for on the ground that preparation for starting a movement can be accurately made. On the other hand, no such preparation can be made in stopping a rhythmic movement, such as is used in writing, since the character of the inhibition depends on the stage of the movement which happens to be in progress at the time of the signal. In starting a movement the reaction time varied with the complexity of the course of the movement after the reaction, which seemed to be reflected back into the preparatory state. Changing the direction was the slowest of all. Consciousness in general was correlated with the whole progressively developing coordination rather than with its separate elements.

Dr. F. Lyman Wells discussed 'The Validity of Individual Judgment as Measured by its Departure from an Average.' When a number of representatives of a given class or group independently pass judgment on, say, the relative merits of different authors, the average judgment is important in that it shows how the authors have impressed this class or group, and the deviation of an individual's judgment from the average measures the closeness of his conformity to the group standard. It remains possible that an individual may judge by a better standard than that of the group, and in fact persons who from their experience and ability would be expected to be the best judges of literary merit are sometimes found to differ greatly from the average. The standard of judgment actually employed by a group may differ widely from the standard which the group would themselves consciously assign as the best: such a difference was found by experiment to obtain in the case of judgments of literary merit.

Mr. W. C. Ruediger spoke on 'The Period of Mental Reconstruction.' A carefully conducted questionary, adapted to statistical treatment, showed great individual differences in the suddenness and vividness of the transition from early beliefs and intellectual attitudes to those of mature life. A large share of the individuals questioned are unable to point to any period of transition, while others report a perfectly defined intellectual 'conversion.' The period of this change is on the average later than that of religious conversion.

Professor Edward L. Thorndike reported some 'Experiments in Memory for Paired Associations.' Twenty-five adults practised from 12 to 40 hours in learning the English equivalents of German words previously unknown to them. This practise did not appreciably increase the number of pairs learned per hour; the result for paired associations differs in this respect from that obtained by James and others in memorizing poetry and by Ebert and Meumann in memorizing nonsense syllables. Also the rapid loss of memory found by Ebbinghaus in case of nonsense syllables did not appear; the loss within a month was very slight. The correlation between the power to remember for a minute and the power to remember for hours and days is surely positive and probably very high. Individual differences in memory, in this test, are of approximately the same magnitude as in efficiency of observation, controlled association and selective thinking, and greater than in reaction time and sense discrimination.

Mr. H. N. Loomis reported his work on 'Reactions to Weights of Unequal Size.' The movements of the lifted weights, being graphically recorded, showed that, on first approaching the experiment, a person lifted the bulkier weight with the greater force; after repeated lifting this inequality decreased.

Professor James McKeen Cattell read a paper on 'Perceptions, Images and Illusions,' in which he emphasized, as important among the points of difference between a sensation and an image, the weaker tendency of the image to issue in motor reaction, and advanced a number of facts going to show that this relative lack of motor tendency was valuable in enabling us to distinguish images from sensations.

Professor W. P. Montague classified and criticized the various conceptions of truth as introductory to a view of 'Truth as Compossibility.'

R. S. Woodworth,
Secretary.

REVIEWS AND ABSTRACTS OF LITERATURE

The Persistent Problems of Philosophy. An Introduction to Metaphysics through the Study of Modern Systems. Mary Whiton Calkins. New York: The Macmillan Co. 1907. Pp. xxii + 575.

The scope and purport of this interesting book can not be better stated than in the words of the writer: "I have . . . attempted to combine . . . what seem to me the essential features of a systematic introduction to metaphysics with those of a history of modern philosophy. . . . I hope . . . that certain features of the book may prove useful; in particular, the plan on which it classifies metaphysical systems, the summaries it offers as well of the arguments as of the conclusions of modern philosophers, the exact quotations and multiplied text references of its expositions. . . . In the main, this [the bibliographical and critical material] has been relegated, with the biographies, to the appendix of the book, that the continuity of metaphysical discussion may not be broken." So much from the preface; and then, as indicating the results attained, the noble statement with which the principal argument concludes: "We have ended one stage of our philosophic journey, for we have gained a vision of the truth as the monistic personalist sees it: the vision of a One which includes, without annihilating, the many, of an absolute self